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SLAVIC ANTIQUITIES.

PROFESSOR DR. LUBOR NIEDERLE, of the University of Prague, is widely and creditably known as one of the leading Slavic anthropologists; and it is quite appropriate, therefore, that he should appear as editor of a journal devoted to the collection of works and essays on Slavic archæology (*Vestník Slovanských Starozitností*), the first number of which has recently been issued. Its articles are printed either in Czech, Russian, German, French, English or Latin, as a learned Slav is quite indifferent to such a trifle as languages. They offer careful reviews and synopses of the contributions to this branch from all the avenues of scientific literature. The journal is so useful that it will surely be well patronized by the Slavonic antiquaries.

ANCIENT LABOR UNIONS.

A POWERFUL social force, which the ethnologist is apt to overlook, is that of the commercial and labor unions which we call 'gilds.' An excellent illustration of their influence in early society is presented in an article by Professor E. W. Hopkins in the *Yale Review* (May and August, 1898). He studies them as they have existed in India for nearly 3,000 years. In the Laws of Manu the rules of the gilds are reckoned on a par with those of castes and families. Five hundred years later they had reached such a degree of supremacy that the precept is laid down: "The king must approve of whatever the gilds do, whether it is cruel or kind!" The most rabid labor unionist of our time could not wish for more.

D. G. BRINTON.

UNIVERSITY OF PENNSYLVANIA.

SCIENTIFIC NOTES AND NEWS.

BULLETIN OF THE U. S. GEOLOGICAL SURVEY
DESCRIPTIVE OF THE EDUCATIONAL
SERIES OF ROCK SPECIMENS.

PERCEIVING that the field parties of the United States Geological Survey had, in the

course of their regular work, exceptional opportunities for making such a collection, it was determined by the Director of the Survey away back in 1882 to have these parties collect duplicate type specimens of rocks, with a view to the making-up of suites for the use of the educational institutions of the country for teaching purposes. Under the immediate direction of Mr. J. S. Diller, who has had the assistance, from time to time, of other geologists and petrographers, the work of collecting was begun and carried to completion and the material was segregated, numbered and described. The suites, numbering two hundred and fifty and comprising about one hundred and sixty specimens each, were about a year ago distributed to the universities, colleges and other institutions of learning which had made application therefor.

An important feature of the undertaking, however, was still unfinished when the suites were sent out, viz., a hand-book for the use of the student. This has just been printed. It comprises 400 pages of text and 65 illustrations. It is devoted in the main to descriptions, written by sixteen different specialists connected with the Survey, of the rocks comprising the collection, although it also contains chapters on rocks in general and their study, including observations on structural features, methods of physical analysis, the principal rock-making minerals and rock classification. The work, which will be a valuable accessory to a valuable rock collection, is published as Bulletin 150 of the Geological Survey series, under the title, 'The Educational Series of Rock Specimens, collected and distributed by the United States Geological Survey, by Joseph Silas Diller.' The cost of the bulletin is 25 cents, and it may be obtained by applying to the Director of the U. S. Geological Survey, Washington, D. C.

W. F. M.

THE GERMAN DEEP-SEA EXPEDITION.

PROFESSOR CHUN, the leader of the German Deep-Sea Expedition, has sent to Sir John Murray some account of the progress of the work since the expedition left in August last on the steamship *Valdivia*, and this forms the basis of an article in the *London Times*. It will be re-

membered that the German Parliament voted 300,000 Marks towards its equipment. Additional grants will be made to cover further expenses and the cost of publishing the scientific results. Professor Chun is accompanied by a staff of eleven scientific men, each of whom receives eight Marks per day from the Government, and their lives are insured for 30,000 Marks each.

The route to be followed may be divided into three portions: (1) From Hamburg round the north of Scotland to the Canary Islands, past the Cape Verd Islands, touching at the mouth of the Cameroons and Congo Rivers and Wal-fisch Bay to Cape Town; (2) from the Cape of Good Hope the Agulhas Bank will be examined, thence the expedition will proceed southwards past Prince Edward Island to the edge of the Antarctic ice, returning northwards through the center of the Indian Ocean to the Cocos and Christmas Islands, and thence to Padang, in Sumatra; (3) from Padang to Ceylon, thence calling at the Chagos, Seychelles and Amirante groups to Zanzibar, returning home by Sokotra, the Red Sea, Suez Canal and the Mediterranean.

The results so far obtained are of great interest to naturalists and oceanographers. Serial temperature observations were taken in the warm and cold areas of the Farøe Channel, respectively south and north of the Wyville-Thomson Ridge, which separates the ice-cold polar water flowing southwards from the warm Atlantic water flowing northwards. Regular observations were made on the specific gravity of the surface waters, and, as opportunity offered, on that of the deeper waters, also on the density, color and transparency of the water, and on the direction of the surface currents. A meteorological register is kept, in which observations are entered every four hours day and night, and self-registering instruments give continuous records of the barometric pressure, the temperature and humidity of the atmosphere. In the chemical laboratory the gases and chlorine contained in many deep-sea waters have been determined.

The samples of deep-sea deposits are collected and preserved by the chemist under Professor Chun's personal supervision. In some

of the deposits the bacteriologist has observed many forms of bacteria, and in the samples of water from the greater depths various species of bacteria have also been found. The dredgings and trawlings, and the observations with closing nets in intermediate waters, have yielded results of the greatest importance. The closing tow-nets and large vertical nets have been used with remarkable success. Many deep-sea crustaceans and fishes, which were taken in the dredge and trawl by earlier expeditions and were, therefore, supposed to live on the bottom, have been proved to live a pelagic life, floating or swimming in the intermediate waters. The botanist is paying special attention to the contents of these closing nets, with the view of determining to what depth below the surface living diatoms, peridiniae and protococcaceae descend.

On the way to the Canary Islands observations were made in the neighborhood of the Josephine and Seine Banks, which rise steeply from the ocean bed to within less than 100 fathoms beneath the surface of the North Atlantic. Around the Seine Bank series of soundings and temperatures were taken, and the dredgings showed a great abundance of crinoids (*Antedon phalangium*), hydroids and antipathids. The expedition proceeds from the Canaries, by way of the Gulf of Guinea, to the Cape of Good Hope, Cape Town being reached early in November, and before it sails towards the Antarctic ice the Agulhas Bank will be systematically explored. This expedition may be regarded as to some extent preliminary to the Antarctic expedition which will leave Germany in 1900.

GENERAL.

THE American Humane Society meets in Washington next month and it is expected that it will attempt to secure the passage of the vivisection bill now pending in the Senate. It is important that men of science and physicians should use their influence, especially by direct communication with their respective Senators, to prevent the passage of a bill that will interfere with the progress of science in the District of Columbia, and which may exert a harmful influence throughout the country.

THE Hurley Bill, providing for the adoption

of the metric system of weights and measures in the United States and its compulsory use in all government transactions except the completion of surveys of the public lands, will be brought up in the approaching session of Congress. The bill, it will be remembered, was defeated by only three votes in the 54th Congress and the increased interest in the foreign trade of the United States seems likely to influence its passage this winter. Scientific societies and men of science should exert such influence as they possess to call attention to the importance of the measure.

THE American Chemical Society will hold its winter meeting in New York City, beginning on December 27th.

THE eleventh winter meeting of the American Geological Society will be held in New York City, beginning on Wednesday, December 28th, in the geological lecture room, Schermerhorn Hall, Columbia University. The Council will meet on Tuesday evening, at the Endicott Hotel, the headquarters of the Society, and also Wednesday morning. The Society will be called to order by President Stevenson at 10 o'clock a. m. The President's address will probably be given on Wednesday morning, and the usual subscription dinner will be on Thursday evening. The list of papers will be mailed to Fellows on December 6th.

THE Biological Laboratory of the United States Fish Commission at Woods Holl will be open throughout the winter to those who may desire to avail themselves of the opportunities afforded for investigation in maritime zoology and embryology. Several of the winter fishes have already begun to breed, and the surface fauna is materially different from that of the summer months. The Laboratory is provided with steam heat, and a limited number of rooms in the residence are available. Applications should be addressed to the Director, Dr. H. C. Bumpus, Woods Holl, Mass.

IN connection with the approaching meeting of the New York State Science Teachers' Association it is proposed to hold an exhibition of pieces of apparatus useful in teaching science. Those who wish to examine special instruments are requested to communicate with Professor

R. E. Dodge, Teachers College, New York, and efforts will be made to have the instruments on exhibition.

THE annual convention of the Association of Agricultural Colleges and Experiment Stations met last week in Washington.

MR. STANLEY FLOWER, of the King of Siam's Museum, at Bangkok, has been appointed Superintendent of the Cairo Zoological Gardens.

DR. MARCUS S. FARR has been appointed curator of the zoological collection of the New York State Museum, University of the State of New York, Albany.

A BUST in relief of the physiologist, G. von Fleischl-Marxow, who died in 1891, has been unveiled in the Court of the University of Vienna.

AT a meeting of former instructors, fellow students and students of the late James Ingram Peck, at John Hopkins University on November 5th, the following resolution was adopted.

Whereas we cannot forget that James Ingram Peck exemplified in his own life all those high qualities of enthusiasm for truth, of devotion to scientific research and of earnestness in the instruction of others, which it is the chief aim and best reward of a university to diffuse among men :

We, therefore, resolve that :

While we mourn the untimely loss of one who had been the earnest and faithful pupil of some among us, the enthusiastic and inspiring fellow student or the patient, kindly and helpful teacher of others, we are glad to remember his devotion to the highest and best work of a learned man and his success in handing on to his associates his unselfish enthusiasm in the pursuit of truth.

EDWIN A. KIMBALL, an inventor and mechanical expert formerly superintendent of the mechanical department of the University of Illinois and the Illinois Industrial Home for the Blind in Chicago, died in that city on November 14th, aged 64 years.

WE have also to record the death of M. Alexander Pilliet, Curator of the Musée Dupuytren, the anatomical museum of the University of Paris and well known for his contributions to morbid anatomy. He died in Paris on November 2d, at the age of 38 years.

THE death is announced of John W. Keely in Philadelphia, on November 18th. Mr. Keely,

as is well known, secured great notoriety and a considerable amount of money by a mysterious motor, a description of which has never been given in intelligible terms.

THE Royal Geographical Society, London, has subscribed £5,000 towards the British Antarctic Expedition.

A NUMBER of British and American residents in western China have, as we learn from the London *Times*, addressed a memorial to Lord Salisbury on the obstacles to and delays in communication between the upper and lower waters of the Yang-tsze. These are, the memorialists say, not only a hindrance to trade, but also a danger to the lives and properties of missionaries and others resident in the interior, on account of the difficulty of affording proper protection against rioters. Mr. Little's experiences have proved that the rapids are navigable, but they also show the necessity of a careful survey of the river from Ichang upwards before steam communication can become regular and profitable, and hence the memorialists ask Lord Salisbury to consider the propriety, in the interests of British residents and British trade in western China, of instituting such a survey by naval experts at an early date.

DR. CHARLES F. MILLSPAUGH, curator of the botanical department of the Field Columbian Museum and lecturer in the University of Chicago, is about to leave New York in the yacht *Utowana* for the coast of Yucatan with a view to studying the flora of the interior of the country. This is Dr. Millspaugh's fourth expedition to Yucatan.

A NEW steamship, *Pathfinder*, for the U. S. Coast Survey will be launched on December 7th. It was designed especially for work in Alaskan waters and is said to be the finest vessel ever built for work of this character.

ON recommendation of the Franklin Institute the Board of Directors of Philadelphia City Trusts have awarded medals purchased by the John Scott fund to John W. Hyatt, of Newark, N. J., for his elastic spiral anti-friction roller; to Melvin L. Severy, of Arlington Heights, Mass., for his impression process, and to Henry Lyman Sayen, of Philadelphia, for his improvement in Röntgen-ray tubes. The in-

come of the medal fund, which was created in 1816, is willed by the testator "to be laid out in premiums to be distributed among ingenious men and women who make useful inventions, along with which shall be given a copper medal."

THE Paris *Temps* states that Professor Grassi has discovered in the laboratory of the hospital of Saint Esprit, at Rome, the bacillus of malaria. Its host is said to be an insect of the mosquito family.

SURGEONS Wasdin and Geddings, who have spent about a year studying yellow fever in the South, have been sent to Havana to continue their studies there. Their previous work has, it appears, to a certain extent, confirmed the researches of Sanarelli.

THE commission to be sent by the British government to India to investigate the plague, to which we recently called attention, has now been appointed and consists of Dr. Thomas R. Fraser, F. R. S., professor of materia medica and clinical medicine at Edinburgh University, who has accepted the duty of President, and with him will be associated two other scientific experts, Dr. Wright, professor of pathology at the Army Medical School, Netley, and Dr. Rüffer, who has been for some time head of the Egyptian Sanitary Department at Cairo. Two officers of the Indian Civil Service, Mr. J. P. Hewett, C. I. E., and Mr. A. Cumine, both of whom have had much to do with recent plague affairs in India, have also been appointed to the commission by the government of India. The scope of the commissioners' inquiries will include: (1) the origin of the different outbreaks of plague; (2) the manner in which the disease is communicated; (3) the effects of certain prophylactic and curative serums that have been tried or recommended for the disease. The members of the commission will reach Bombay towards the end of the present month.

THE plague in Bombay is showing some abatement, the deaths during the last week in October having decreased to 96. In the Presidency of Bombay no less than 5,000 deaths occurred during the week, and an increase has occurred in the Mysore state, 400 deaths being recorded in Bangalore alone. It is supposed

that there is a serious outbreak of the plague in the Samarkand district, the Russian government having sent thither 40 physicians, but no details can be obtained. An isolated case has occurred in Warsaw.

THE British Colonial Office has requested the Royal College of Physicians to report to it on the communicability of leprosy, and the question has been referred to a committee consisting of Sir D. Duckworth, Drs. R. Liveing, Payne, Hebb, Heron and J. Anderson, with power to confer with others not belonging to the College.

Nature quotes from the *Sydney Daily Telegraph* of September 9th particulars as to the coral-boring operations at Funafuti, news having been received via New Zealand, through the U. S. S. Co.'s steamer *Poherua*, which coaled H. M. S. *Porpoise* at Funafuti, as to the progress of the two bores, one on land, and the other in the lagoon of that coral atoll. With regard to the lagoon bore, operations were commenced on August 15th, Commander Sturdee having succeeded in mooring the warship so taut that it was possible to work the boring pipes without risk of their bending or breaking from the bows of the warship. Mr. G. H. Halligan, who is in immediate charge of the boring plant, reports that for the first twenty-four hours of boring a depth of 109 feet was attained, the total depth of the bore being 212 feet below the water level of the lagoon, the depth of water to the bottom of the lagoon being 103 feet. The *Poherua* left at the end of the first day's boring. As regards the nature of the material bored, Mr. Halligan states that the first 80 feet below the bottom of the lagoon were formed of sand, composed of joints of *Halimeda* (a seaweed which secretes a jointed stem of lime) and of fragments of shells. The remaining 29 feet were in similar material, but containing small fragments of coral getting larger at the deeper levels. The deepening of the old bore, discontinued last year at a depth of 698 feet, on the main island of Funafuti, has been proceeding slowly but steadily. The party were landed there by the London Missionary Society's steamer *John Williams*, on June 20th last. As was anticipated, little difficulty was experienced in re-

driving the lining pipes into the old bore and washing out the sand and rubble which had choked the bore-hole. Pipes were laid from the site of the old bore to some small water-holes, from which a supply of fresh water was obtained for the boiler. By July 25th, the relining and cleaning of the boiler having been successfully accomplished, boring was resumed, and up to the time when the steamer *Poherua* left, a depth of 840 feet had been reached. The bore last year terminated in soft dolomite limestone at 698 feet, but it has now been ascertained that below this is a hard rock, so hard that the portion of the bore-hole which penetrates it no longer needs to be lined with iron pipes, a condition which must facilitate the work of boring. Mr. A. E. Finckh reports that this hard rock is largely composed of corals and shells. The depth of 840 feet is exactly the crucial depth which it was hoped the bore might reach, and, if possible, exceed, as at a corresponding depth on the ocean face of the reef there is a strongly marked shelf, as shown by the soundings by Captain A. Moysten Field, of H. M. S. *Penguin*, and it is considered that this shelf, at the 140 fathoms' level, marks the downward limit of the coral formation.

THE Department of Agriculture of the Cape of Good Hope has issued, according to *Natural Science*, 'The Report of the Marine Biologist for the year 1897,' by Mr. J. D. F. Gilchrist. In the report for 1896 and in the present report reliable information has been published relative to the fishing industry and fishing centers of the colony. The colonial government is now in a position to appreciate the value of this important industry and the possibilities of its development, and to legislate on matter which may arise in regard to it. In order to satisfactorily investigate the fishing grounds one of the most modern types of steam vessels was procured, together with a skilled crew, and they set to work with long lines, nets and trawl. So far it is found that there is within easy reach of Cape Town an excellent trawling ground, rivalling the North Sea in productiveness, and among other excellent fish, soles occur there abundantly, some of them turning the scales at 8 and 9 pounds, from near St. Helena Bay. The future work of the *Pieter Faure*, as the

vessel is called, will be the investigation of the Agulhas Bank from Mossel Bay and Port Elizabeth, Knysna, Port Alfred and East London. The scientific aspect of the work will be kept in sight, but for the present more attention must be given to the industry. Considerable opposition has been made to the operations of the steam trawler, but it has been pointed out that Parliament was only experimenting at present, that proper investigation would be made into the alleged disturbance of spawn and the fishing limits for ordinary fishermen, but that the store of food available round the coast would certainly be exploited in a country clamoring for cheap food, and that the interests of a large country would outweigh the interests of a few individual fishermen. The report contains some valuable charts, descriptions of a new *Arnoglossus* by Mr. Boulenger, and a new genus of gasteropoda *Neptuneopsis gilchristi* by Mr. G. B. Sowerby, besides much other statistical information.

A LARGE number of visitors, as we learn from the London *Times*, assembled at the shipyard of Messrs. W. G. Armstrong, Whitworth & Co., Walker-on-Tyne, on October 29th, to witness the novel launch of an icebreaking steamer, said to be the largest in the world, which the firm has built for the Russian government. The vessel is the pioneer ship of what may be termed pelagic icebreakers. The dimensions and appearance of the vessel would suggest a battleship were it not that the bow is cut away and forms an exceedingly long overhang, which serves the double purpose of breaking the ice with which it comes in contact and of protecting the forward propeller. The principle upon which the new vessel attacks the ice is by force, augmented by science. The forward propeller, by disturbing the water under the ice, deprives it of its support, and then renders it a comparatively easy task for the heavy vessel to break through it. The principal dimensions are: Length 305 feet, breadth 71 feet, and depth 42 feet 6 inches. When fully loaded the draught will be 25 feet, and the corresponding displacement about 8,000 tons. The propelling machinery has been divided into four sets, of which three sets are aft, each driving its own propeller, and one set forward. The combined

power of these four sets of machinery will be 10,000 horse-power. There is accommodation for 30 first-class passengers, 10 second-class and 50 third-class passengers, besides that for the captain, officers, engineers and crew of the vessel. There is ample capacity for cargo, so that the vessel, in addition to conveying merchant vessels through the ice, is herself capable of carrying a heavy cargo. The stern of the icebreaker is cut to form a recess, into which the stem of another vessel can be securely lashed, and thus obtain the utmost protection from her powerful consort. Admiral Makaroff has also in view the possibility of augmenting the icebreaking capabilities of this vessel by having the assistance of a second vessel pushing her, as to which he has already made experiments.

THE British Select Committee on the Museums of the Science and Art Department recommended that the collection of preserved fish bequeathed to the nation by the late Professor Buckland should be abolished. In view of this action the Piscatorial Society has adopted a request that reads as follows: The committee inspected the collection, which they found in a deplorable condition and quite inadequate to carry out the testator's intentions, evidently owing to absolute neglect since it was taken over. There being no catalogue, it is impossible to determine how much of the original collection still exists. The purchased additions apparently consist of something less than two dozen specimens, the majority of which have no direct bearing upon British fish industries. A large amount of the space allotted to the exhibit is taken up by objects which, however interesting in themselves, have no connection with either fish or fisheries. Your committee fully endorse the opinion of the Select Committee of the House of Commons as to the danger arising from the specimens preserved in spirits, as the building is certainly unsuited for the storage of such exhibits, but fail to see the point of the objection as regards the Buckland bequest, inasmuch as the majority of the fish in alcohol belong to the Day collection, which is not in any way an industrial exhibit and should be placed in the Natural History Museum. As regards the testator's intention to

provide a consulting and reference room for his fellow-countrymen, whether interested in sea or river fisheries, your committee are of opinion that such an educational center is urgently needed, and that the collection in question, although inadequate through neglect, is capable of being brought up to date and of taking the place contemplated for it by the donor. Subject to Mrs. Buckland's life interest, a sum of £5,000 was bequeathed to the Director and Assistant-Director of the South Kensington Museum, in trust for the British nation, to provide lectures on fish culture in connection with this unique series of specimens. Your committee, however, have failed to ascertain what has been done with this money. All that they know is that no such lectureship exists, despite the statement of Mr. George Bompas in his 'Life of Frank Buckland,' published in 1885, that after the death of Mrs. Buckland '£5,000 was given to found a lectureship.'

THE British Institute of Preventive Medicine, says *Nature*, which was founded with the view of establishing in this country a national home for bacteriological work in all its branches, has made considerable progress towards the achievement of this aim during the past few years. The bacteriological laboratories are now fully organized, the serum therapeutics laboratory is on a firm footing, whilst the application of bacteriology to hygiene are finding full recognition. A further addition has just been made to the departments of the Institute in response to the growing demands of the times. A large laboratory at Chelsea has been assigned to investigation and instruction in technical bacteriology. In this laboratory the agriculturist, the chemist, the brewer and others will find the instruction provided that they individually require for successfully employing the living agents of fermentation. Investigations will also be undertaken, and it is hoped that the laboratory will become a center of useful work, and promote the advancement of a line of research of the greatest importance to the industries of the country. We have had hitherto to rely upon the research work of foreign laboratories in this direction. The laboratory has been named the Hansen laboratory, in recognition of the pioneer work of

the distinguished investigator, and will be under the superintendence of Dr. G. Harris Morris. The formal opening of the British Institute will take place early in the new year, when the public will have an opportunity of inspecting the provisions made for furthering the objects of the Institute. The occasion will also be marked by the issue of a fresh volume of *Transactions* of the Institute.

A ZURICH correspondent writes to the London *Times* that the attention of the Swiss Federal authorities has lately been drawn to the inadequate administration of the law for the protection of birds of passage and song birds in the Canton of Ticino. In the migration seasons of the year the destruction of these birds increases to such an extent that larks, starlings, finches, the titmouse, etc., are being offered in the public markets of Lugano and Ticino for 1f. the dozen, and are served as a staple article of food even in the cheapest restaurants. The birds in their southward passage are caught by nets, decoys, snares and traps of every kind, and the poverty of the rural Italians in the district serves as an additional inducement for making a hasty profit from the wholesale destruction and capture of singing birds. The evil is notorious and one of long standing, but Swiss law forbids the use of snares, traps, nets and decoy birds, and it is hoped the Federal and Cantonal authorities will be awakened to the necessity of dealing with this systematic neglect of the law. North of the Alps bird life is well protected throughout the Cantons, and here the tameness and abundance of the birds, which so many visitors to Switzerland have noticed, are the best testimony of the value of such protective laws when effectively administered and backed up by public opinion.

UNIVERSITY AND EDUCATIONAL NEWS.

PRESIDENT DWIGHT has presented his resignation from the Presidency of Yale University on the ground that he has reached his seventieth year. The Corporation has passed a minute urging him to retain the Presidency until the bi-centennial celebration in 1901, but it is said that President Dwight will retire at the end of the present year. At the same meeting of the